HUMAN HEALTH

ENVIRONMENTAL HEALTH

COMPLETE SOLUTIONS FOR YOUR LAB

Lubricants Analysis

PerkinElmer®
For the Better

WHATEVER YOU'RE LOOKING FOR WE'VE GOT IT

The analysis of lubricants for conformity and process control is important in providing a high-quality lubricant. The ability to measure a wide range of analytes cost-effectively can mean the avoidance of damaged equipment or changing the lubricant more frequently than necessary. At PerkinElmer®, we are at the forefront of technology. We offer analytical solutions compliant with Caterpillar® S•O•S, military JOAP and ASTM methods to facilitate measurements in both new and used lubricants. Highly automated, these solutions provide cost-effective analyses with rapid turnaround time to maximize the impact of monitoring trends for any selected machine. In addition to the existing instruments and applications, you can expect more for your laboratory.

Our complete portfolio of consumables, parts, supplies, training and service are designed to help you meet all your lubricant measurement challenges. We invest heavily in testing and validating our products to ensure you receive guaranteed compatibility and performance – on-time, every time. From one instrument to multi-lab solutions, we have what you need to keep your laboratory running effectively and efficiently.

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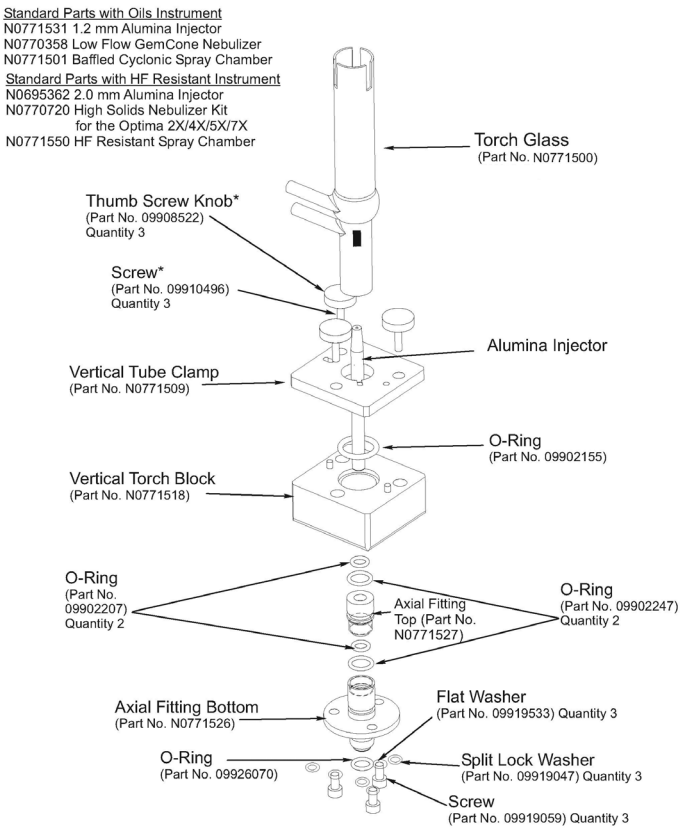
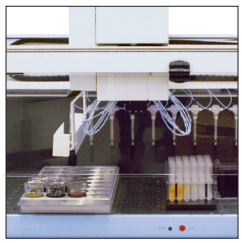
Optima

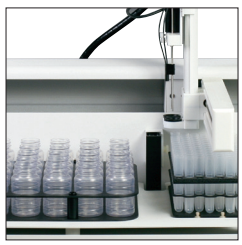
The PerkinElmer® Optima™ Series of ICP-OES coupled with two popular offline automated oil dilutors is the gold standard for the measurement of additives and wear metals in oil. Typical analytes measured using the routine oil method require different diagnostic capabilities of the various elements for additive depletion, wear indication and contamination.

Mounting Block Diagram 4300V, 5300V, 7300V



*Thumb screw knob (Part No. 09908522) must be pressed onto screw (Part No. 09910496.)





The Optima 8300, with the JANUS Oil Workstation (top) and the CETAC APS 1650 (bottom), offers the performance required to maximize productivity.

Optima 4300V, 5300V and 7300V

Torch and Accessories

The sample introduction system has been designed with accessibility and ease of maintenance in mind. Demountable design using one-piece quartz tubing for plasma and auxiliary gas flow. Available in a wide range of styles from 0 – 3 slots, depending on your instrument and application needs. Torches without slots are recommended for organic solvents. 1-slot torches are the standard torch for aqueous solutions. 3-slot torches are typically used for organic analysis.

Description	Part No.
3-slot torch	N0771500
Torch adapter with oxygen port	N0774070
Torch bonnet	N0775289
Retaining ring for D-torch	N0777055
Quartz outer tube for 4/5/7300V D-torch	N0777053
D-torch for 4/5/7300V with quartz outer tube	N0777051
Ceramic outer tube for 4/5/7300V D-torch	N0777052
Bonnet RF generator 0.92 quartz	N0695456
Purge extension window	N0581497
Base and inner tube for 4/5/7300V D-torch	N0777054

Autosampler Tubes

We offer a wide variety of high-quality autosampler tubes that are compatible with virtually all sample introduction systems

Description	Part No.
17 mm x 100 mm Polypropylene tubes (Qty. 1200)	N0777167
13 mm x 100 mm Polypropylene tubes (Qty.1200)	N0777156
50 mL Autosampler tubes conical/ freestanding 28 mm x 115 mm Qty. 500	B0193234

Spray Chambers

Baffled Cyclonic Spray Chambers

The Baffled Cyclonic Spray Chamber features a central transfer tube which acts as a secondary particle separator, helping to separate larger aerosol particles from the sample. This reduces solvent load in the plasma without compromising detection limits.

Description	Part No.
Spray chamber 8 mm baffled	N0771501
DV Spray chamber 4 mm baffled	N0776090

Nebulizers

Low-flow GemCones™ permit lower nebulizer gas flow rates, useful for spectral lines with high excitation energies and for providing a more robust plasma. Optimized for low nebulizer gas flow for use with the cyclonic spray chamber.

Description	Part No.
GemCone nebulizer	N0770358
GemCone sample capillary adapter	N0371505

Injectors

Alumina injectors are corrosion-resistant to all mineral acids including HF and aqua regia. They are also used with less volatile organic solvents, e.g., xylene.

Description	Part No.
Oil injector 1.2 mm tapered	N0771531

Organic Kits for ICP

The Organics Kits are specially designed for the Optima instruments listed to run non aqueous samples like new oil, used oil, vegetable oil or biodiesel that are diluted with a solvent like kerosene. Other more volatile organic solvents may require additional hardware to run properly on these instruments. Special plasma conditions are required when using these kits when running an organic solvent so check the instrument manual or contact your local Product Specialist or Service Engineer for more information.

Organics Kit for Optima 8x00 — N0780608

Includes	Qty	Part No.
3 Slot Quartz Torch	2	N0780132
1.2 mm i.d. Alumina Injector	2	N0781007
Baffled Cyclonic Spray Chamber 4 mm	1	N0776090
Gemcone™ Low-Flow Nebulizer	1	N0770358
Cyclonic Spray Chamber Adapter	1	N0770614
Injector Adapter Washer	1	N0776014
Injector Adapter	1	N0776091
Injector Adapter Nut	1	N0776025
O-Ring	1	09902207
O-Ring 8.74 ID 1.78 WD	2	09921028

Organics Kit for Optima 2x00/4x00/5x00/7x00 DV — N0770420

Includes	Qty	Part No.
3 Slot Quartz Torch	1	N0772005
1.2 mm i.d. Alumina Injector	1	N0776093
Baffled Cyclonic Spray Chamber 4 mm	1	N0776090
Gemcone™ Low-Flow Nebulizer	1	N0770358
Cyclonic Spray Chamber Adapter	1	N0770614
Injector Adapter Washer	1	N0776014
Injector Adapter Nut	1	N0776025
Injector Adapter	1	N0776091
O-Ring	1	09902207
O-Ring 8.74 ID 1.78 WD	2	09921028

Organics Kit for Optima 4300 V/5300 V/7300 V — N0770732

Includes	Qty	Part No.
3 Slot Quartz Torch	1	N0771500
Quartz Bonnet	1	N0775289
1.2 mm i.d. Alumina Injector	1	N0771531
Baffled Cyclonic Spray Chamber	1	N0771501
GemCone™ Low-Flow Nebulizer	1	N0770358
Quartz Torch Copper Ignitor Tape – Qty. 120 pcs.	1	N0775297

Used Oil Autosampler Probes and Accessories

Autosampler probe is compatible with the AS-90plus, AS-93plus, S10 Autosamplers and all CETAC Autosamplers. The probe includes a particulate filter on the tip to remove fibers.

Description	Part No.
Oil Autosampler probe with filter	N0771529
Stirring paddle for ASX 1400 and 1600	N0777147
CETAC 80 rack	N0774085
CETAC 90 Rack	N0777154
CETAC 96 Rack	N0777368

Lubricant and Fuel Standards

We offer a wide selection of standards including Wear Metal Metallo-Organic Standards and Biodiesel Standards. We ensure accuracy by Quality Testing with NIST® Standard Reference Materials when available. Certificate of Analysis is also supplied with each standard.

Matrix Oils and Solvents

Description	Matrix	Volume	Part No.
75 cSt hydrocarbon oil	75 cSt oil	500 mL	N0776103
75 cSt hydrocarbon oil	75 cSt oil	1 Gal.	N9308262
20 cSt mineral oil (low sulfur)	20 cSt mineral oil	500 mL	N9308263
20 cSt mineral oil (low sulfur)	20 cSt mineral oil	1/2 Gal.	N9308264
V-Solv™ ICP solvent*	V-Solv™	1 Gal.	N9308265

* V-Solv™ ICP solvent is a proprietary solvent that is used for diluting oil and other organic liquids for analysis by ICP and ICP-MS. Use V-Solv™ as a matrix blank and as a diluent for your calibration standards and samples for outstanding nebulization characteristics.

V-23 Wear Metal Standards

Includes: Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn

Description	Matrix	Volume	Part No.
V-23 wear metals standards 10 µg/g	hydrocarbon oil	100 g	N9308239
		200 g	N0776109
		400 g	N9308315
V-23 wear metals standards 30 µg/g	hydrocarbon oil	100 g	N9308241
		200 g	N9308242
		400 g	N9308316
V-23 wear metals standards 50 µg/g	hydrocarbon oil	100 g	N9308243
		200 g	N0776104
		400 g	N9308317
V-23 wear metals standards 100 µg/g	hydrocarbon oil	100 g	N9308245
		200 g	N0776105
		400 g	N9308318
V-23 wear metals standards 300 µg/g	hydrocarbon oil	100 g	N9308247
		200 g	N9308248
		400 g	N9308319
V-23 wear metals standards 500 µg/g	hydrocarbon oil	100 g	N9308249
		200 g	N0776106
		400 g	N9308320
V-23 wear metals standards 900 µg/g	hydrocarbon oil	100 g	N9308251
		100 g	N9308252
		400 g	N9308321

Fuel Dilution Oils

Description	Matrix	Volume	Part No.
Blank for diesel fuel dilution standards	75 cSt hydrocarbon oil	100 mL	N9308266
2% (v/v) devolatilized diesel fuel	75 cSt hydrocarbon oil	100 mL	N9308267
4% (v/v) devolatilized diesel fuel	75 cST hydrocarbon oil	100 mL	N9308297
5% (v/v) devolatilized diesel fuel	75 cSt hydrocarbon oil	100 mL	N9308268
10% (v/v) devolatilized diesel fuel	75 cSt hydrocarbon oil	100 mL	N9308269
Blank for gas fuel dilution standards	75 cSt hydrocarbon oil	100 mL	N9308270
2% (v/v) devolatilized gasoline	75 cSt hydrocarbon oil	100 mL	N9308271
5% (v/v) devolatilized gasoline	75 cSt hydrocarbon oil	100 mL	N9308272
10% (v/v) devolatilized gasoline	75 cSt hydrocarbon oil	100 mL	N9308273

Fuel Dilution Oils, Continued

Description	Matrix	Volume	Part No.
Glycol blank	20 cSt hydrocarbon oil	100 mL	N9308274
Ethylene glycol and propylene glycol – 100 µg/g	20 cSt hydrocarbon oil	100 mL	N9308275
Ethylene glycol and propylene glycol – 500 µg/g	20 cSt hydrocarbon oil	100 mL	N9308276
Ethylene glycol and propylene glycol – 1000 µg/g	20 cSt hydrocarbon oil	100 mL	N9308277

Performance Testing Program Standard (pTP)

Analyze a sample for up to 23 common elements and report the concentration in µg/g (ppm). You may enter all elements or only those that you are interested in. pTP Provides an instant response to submitted values, with convenient color-coded pass/fail indications in green (pass), yellow (borderline) and red (fail) formats via a custom-designed, easy-to-use, on-line user interface.

pTP Standard	**Part No.** N9308314

Internal Standards

Description	Matrix	Volume	Part No.
Cobalt (Co) internal standard, 6%	mineral spirits	200 g	N0776107
Cobalt (Co) internal standard, 6%	mineral spirits	400 g	N9308334
Cobalt (Co) internal standard, 5000 µg/g	hydrocarbon oil	50 g	N9308258

Metal Additive Standards

Description	Matrix	Volume	Part No.
Metal additive standard 4: Ca @ 5000 µg/g: Mg, P, Zn @ 1600 µg/g	hydrocarbon oil	100 g	N9308259
Metal additive standard 4: Ca @ 5000 µg/g: Mg, P, Zn @ 1600 µg/g	hydrocarbon oil	200 g	N0776108
Metal additive standard 4: Ca @ 5000 µg/g: Mg, P, Zn @ 1600 µg/g	hydrocarbon oil	400 g	N9308333

Tubing

Peristaltic pump tubing has a wall thickness of 0.84 mm. Part numbers are for a package of 12 pieces.

Description	Part No.
Solvent flex tubing 0.76 mm ID	00473550
Solvent flex tubing 1.14 mm ID	N0680376
Sample intro tubing 0.58 mm x 0.99 mm 3.0 m	09908265
Rinse tubing kit	N0777566
Rinse tubing kit, ultra-clean	N0777567
2.29 mm i.d. solva tubing	09985735
Viton drain pump tubing and connector kit	N0777455
PTFE tubing 0.31 mm x 0.016 mm	09985708
Viton to begging sample tubing black	N0773118
Viton to begging sample Tubing red	N0773115

Optima Filters

Description	Part No.
Replacement Air Filter for RF Generator Inlet for the Optima 2000/4000 Family	N0775220
Air Filter Assembly for Optima 2000/4000 Family For instrument air supply.	N0770198
Replacement Filter Element for the Final Filter for the Optima 2000/4000 Family. For the shear gas replacement for Air Dryer Filter 00470652.	09907120
Replacement Filter Element for the Pre-Final Filter for the Optima 2000/4000 Family For the shear gas replacement for Air DryerFilter 00470652.	09907122

ASXPRESS Sample Loops

We have various sample loop sizes to fit your application need.

Description	Part No.
1.00 mL loop	N0777081
1.25 mL loop	N0777082
1.50 mL loop	N0777083
2.00 mL loop	N0777084
2.50 mL loop	N0777085
3.00 mL loop	N0777086
3.50 mL loop	N0777087
4.00 mL loop	N0777088
4.50 mL loop	N0777089
5.00 mL loop	N0777090
5.25 mL loop	N0777091
0.91 mL oil loop	N0777593
1.02 mL oil loop	N0777594
1.14 mL oil loop	N0777595
1.25 mL oil loop	N0777596
1.36 mL oil loop	N0777597
1.48 mL oil loop	N0777598

ASXPRESS and 6-Port Valve

When coupled to a compatible autosampler, the *ASXPRESS*® PLUS Rapid Sample Introduction System minimizes times for sample delivery, stabilization and washout, increasing throughput up to 5 times or more. By reducing sample delivery, stabilization and washout times, the *ASXPRESS* PLUS system optimizes sample introduction and reduces costs from materials, power, maintenance and labor.

Description	Part No.
ASXPRESS fitting kit	N0777579
ASXPRESS valve/pump module articulating mounting system	N0777580
ASXPRESS rinse station – ASX-1400-1600 – 60 Pos	N0777583
ASXPRESS rinse station – ASX-1400-1600 – 80 Pos	N0777585
ASXPRESS rinse station – ASX-1400-1600 – 90 Pos	N0777584
ASXPRESS rinse station – ASX-500-510	N0777546
ASXPRESS stirrer block – ASX-1400-1600 – 60 Pos	N0777586
ASXPRESS stirrer block – ASX-1400-1600 – 80 Pos	N0777588
ASXPRESS stirrer block – ASX-1400-1600 – 90 Pos	N0777587
Vacuum pump	N0777564
Vacuum pump flow restrictor line (oils, S.B.) for *ASXPRESS*	N0777592
Vacuum pump flow restrictor line (S.B.) for *ASXPRESS*	N0777573
Daughter board (female I/O) kit for ASX-260	N0777549
Daughter board (female I/O) kit for ASX-520/520HS	N0777550
Rabbit module with *ASXPRESS* firmware (ASX-260/520 standard speed)	N0777576

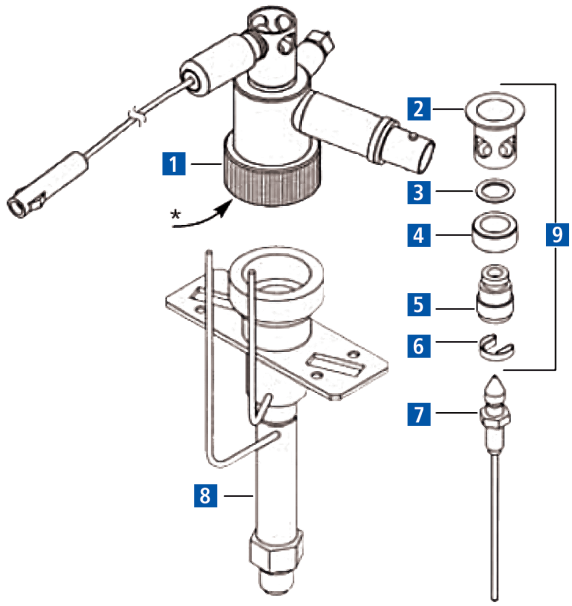
Description	Part No.
Rabbit module with *ASXPRESS* firmware (ASX-520 high speed)	N0777577
Motor-ASX1400 auxiliary pump	N0772120
Carrier solution tee assembly (S.B.) for *ASXPRESS*	N0777574
6-Port valve (S.B.) for aqueous applications	N0777575
6-Port valve (S.B.) for oils applications	N0777578
6-Port valve coupler	N0777570
Rotor, 6-port valve for SP6541 (aqueous applications)	N0777562
Rotor, 6-port valve for SP6556 (oils applications)	N0777581
Stator, 6-port valve for SP6541 (aqueous applications)	N0777563
Stator, 6-port valve for SP6556 (oils applications)	N0777582

Gas Chromatography

Gas chromatography (GC) is a key analytical technique for lubricant analysis. Only gas chromatography can provide a useful quantitative measure of the level of dilution, allowing more precise scheduling of maintenance, thus reducing cost. We offer a complete family of gas chromatography products that are optimized for performance and reliability.

Auto-Ignite FID Replacement Parts

	Description	Part No.
1	Collector head assembly	N6100357
	* Silicone rubber O-Ring (not shown)	09902143
2	Polarizer nozzle	N6103167
3	Spring washer	09907827
4	Nozzle insulator	N6101085
5	Nozzle collector	N6103175
6	FID jet contact/spring	N6001204
7	Jet assembly	N6100361
8	FID body	N6100364
9	Nozzle assembly	N6100430



Columns

The Elite-5 column is the most popular and versatile capillary stationary phase available. The diphenyl groups impart a selectivity towards aromatic compounds. Elite-5 columns are extremely rugged, exhibiting long column lifetime, low bleed, and high maximum operating temperatures. An Elite-5 column is ideal for environmental analyses, such as semivolatile pollutants, phenols, polynuclear aromatic hydrocarbons, pesticides, herbicides, and diesel range organics (DRO). The Elite-5 column exhibits excellent inertness towards highly reactive, trace environmental compounds and has low column bleed to improve detection limits and instrument sensitivity.

Elite-5 (5% – Diphenyl) – Dimethylpolysiloxane

mm	m	um	temp limits	Part No.
0.25	15	0.25	-60 to 330/350	N9316073
0.32	15	0.25	-60 to 330/350	N9316082

Gas Purification System

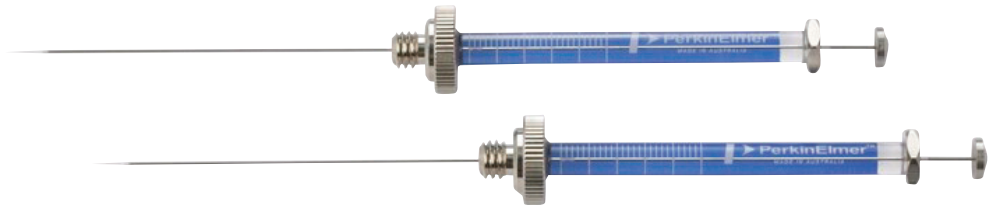
This system provides for high capacity contaminant removal for GC supply gasses, and allows for individual cartridge replacement. It is easy to replace and has a high capacity. The PerkinElmer Gas Purification system consists of three cartridges in a series to reduce column damaging impurities. The first cartridge in the system will remove residual hydrocarbons and water from the carrier gas stream. The second cartridge provides high-capacity oxygen removal (capacity is least 1000 cc of pure oxygen); the third cartridge contains an inorganic indicator that changes from light green to gray to provide warning when the high-capacity oxygen trap is depleted. All systems are helium leak tested after assembly.

Description	Part No.
Gas purification system, 1/8 in. fittings complete system (includes all three traps)	N9306135
Hydrocarbon moisture replacement cartridge	N9306137
High capacity oxygen replacement cartridge	N9306004
Replacement cartridge set, one each hydrocarbon/moisture, high capacity oxygen and indicating oxygen	N9306136
Bypass accessory, allows operation of system when installed in place of cartridge	N9306006
Bench mount adapter	N9306014

High-Purity Brass Regulators (Dual Stage)

High-purity Brass Regulators are constructed of high-purity brass barstock, and have stainless steel diaphragms and metal-to-metal seals. They are suitable for use with high-purity (>99.995% pure) non-corrosive gases.

CGA Fitting	Delivery Pressure Use	Delivery Pressure Range (psig)	Cylinder Pressure Gauge (psig)	Gauge (psig)	Part No.
CGA-350	H2 and Ar/CH4 mixes	4-100	0-250	0-3000	09907128
CGA-580	He, Ar	4-100	0-250	0-3000	09907127



Syringes

Our syringes are individually inspected for accuracy and performance. Recommended autosampler syringes are available in 0.5, 5 and 50 µL capacities.

Description	Part No.
0.5 µL low injection volume syringe, metal plunger 0.63 mm o.d. needle	N6101252
0.5 µL low injection volume syringe metal plunger 0.63 mm o.d. needle blue barrel (pack of 5 syringes)	N6103242

PreVent and Restricter

PreVent™:

Isolation Mode

Eliminates downtime during routine injector maintenance. Can provide approximately 100 extra analytical hours of productivity per system per year.

ELVI Mode

Facilitates manual injection volumes up to 150 µL and automatic injection volumes up to 50 µL without solvent reaching the column or detector.

Time-Saver Mode

Prevents unwanted, high molecular weight material from reaching the detector. Shortens analysis time, facilitates isothermal chromatography and protects from contamination.

ProTect Mode

Eliminates contamination by preventing heavy components in the sample from reaching the expensive and retentive chromatographic column. Allows backflushing during chromatographic run.

Description	Part No.
PreVent Add-On Kit Kit includes all necessary hardware to add PreVent capability to an existing PSS injector with PPC or to a capillary injector with PPC. Includes restrictor and mid-point PPC mode.	N6120144
PreVent Hourglass Guide	N6103082
PreVent Restrictor	
0.06 mm i.d., 108 mm Length	N6103080
0.06 to 0.25 h mm i.d., 104 mm Length	N6100342
PreVent Spacer	N6103082

Liners

Inlet liners for split injection have mixing chambers with tortuous flow paths to allow full vaporization of the sample. Inlet liners for splitless injection are generally designed as straight tubes, although new designs such as gooseneck will help contain the sample in the injector.

Description	i.d. x o.d. x length (mm)	Pkg	Part No.
Programmed Temperature Split/Splitless (PSS) Injector Liners Borosilicate glass split liner *This liner is loosely packed with wool for the specific use of analyzing fuel in oil*	2 x 4 x 86.2	5	N9302949
PSS Glass Liner For PerkinElmer GCs Deactivated Glass w/Deactivated Wool, ideal for general purpose use, the narrow bore and quartz wool increase volatilization and reproducibility	2 x 4.0 x 86.2	5	N9306232
Capillary Split/Splitless Injector Liners Quartz liner for split operation *Good for large volume injections*	4 x 6.2 x 92.1	1	N6121001
Capillary Split/Splitless Glass Liners For PerkinElmer GC's Deactivated Glass w/Deactivated Wool, ideal for general purpose use, Quartz Wool is used to fully vaporize the sample	4 x 6.2 x 92.1	5	N9306236

Vials and Kits

We offer a variety of GC vials, caps and septa to fulfill your application needs. All of our vials are manufactured to specific tolerances that are guaranteed to fit within PerkinElmer instruments. Our patented headspace vial and cap design incorporates pressure-relief features which guarantee safe operation with the high pressure typically developed during thermostatting.

Autosampler Crimp Top Vials, Caps and Septa

Description	Qty	Part No.
Crimp Top Vials:		
2 mL 11 mm Crimp Top Clear Glass Vials (pkg. 100)	1	N9301385
2 mL 11 mm Crimp Top Amber Glass Vials (pkg. 100)	1	N9302680
Crimp Top Septa:		
11 mm Blue Crimp Caps with PTFE Rubber Septa (pkg. 100)	1	N9302686
11 mm Green Crimp Caps with PTFE Rubber Septa (pkg. 100)	1	N9302684
11 mm Red Crimp Caps with PTFE Rubber Septa (pkg. 100)	1	N9302685
11 mm Silver Crimp Caps with PTFE Rubber Septa (pkg. 100)	1	N9306015
11 mm Silver Crimp Caps with Black Viton Septa (pkg. 1000)	1	N9302784
Snap Top Vials/Caps/Septa:		
2 mL 11 mm Clear Snap Wide Opening Vials (pkg. 100)	1	N9303418
2 mL 11 mm Clear Snap Wide Opening Vials with Write-On Patch and Fill Lines (pkg. 100)	1	N9306207
2 mL 11 mm Amber Snap Wide Opening Vials with Write-On Patch and Fill Lines (pkg. 100)	1	N9306208
11 mm Pre-slit PTFE/Silicone Snap Caps (pkg. 100)	1	N9303416
11 mm Pre-slit PTFE/Silicone/PTFE Snap Caps (pkg. 100)	1	N9303417
11 mm PTFE/Silicone Snap Caps (pkg. 100)	1	N9303419

Headspace Crimp-Top Vials and Preassembled Caps

Description	Qty	Part No.
20 mL Headspace clear glass vial (pkg 1000)	1	B0104236
20 mL Headspace crimp top vials (pkg 100)	1	N9306079
20 mL Headspace crimp top vials with write-on white patch and fill lines (pkg 1000)	1	N9303348
20 mL Headspace crimp top vials with write-on white patch and fill lines (pkg 100)	1	N9303349

TurboMatrix™ Headspace Starter Kit

Offers a variety of Headspace consumables so you can evaluate different types of septa and vials for your sampling requirements.

Contents	Qty	Part No.
20 mL Headspace crimp vials (pkg 100)	5	N9306079
20 mL Headspace crimp vials (pkg 1000)	1	B0104236
20 mm PTFE/butyl septa/cap/springs (pkg 100)	1	B0104239
20 mm PTFE/silicone septa/cap/springs (pkg 100)	1	B0104241
O-Rings (pkg 10)	1	B0198110
Needle seal assemblies (pkg 10)	2	B0500833
Pressure gauge with needle for vials	1	B0501377
"Static Headspace Gas Chromatography Theory and Practice" book by B. Kolb and L.S. Ettre	1	N1011210
20 mm hand crimper	1	N9302785
20 mm Electronic Universal Crimper with Global Mains Plug Pack	1	N9304501
20 mm Electronic Universal Decapper with Global Mains Plug Pack	1	N9304503
11 mm Electronic Universal Crimper with Global Mains Plug Pack	1	N9304500
11 mm Electronic Universal Decapper with Global Mains Plug Pack	1	N9304502
Rechargeable Battery 6.4 Volt Lithium Ion	1	N9304504

Headspace Convenience Kits

Description	Qty	Part No.
20 mL PTFE/butyl HS convenience kit		N9303991
20 mm red PTFE/butyl assembly (pkg 100)	1	
20 mL crimp clear vial kit with write-on patch 20 mm cap (pkg 100)	1	
20 mL PTFE/silicone convenience kit		N9303992
20 mm PTFE/silicone assembly (pkg 100)	1	
20 mL crimp clear vial kit with write-on patch 20 mm cap (pkg 100)	1	

NEW! Ultra Quiet Compact Oil-Free Compressor

We are expanding our product portfolio in response to customer requests for an industrial ultra quiet compact oil-free compressor that can be utilized in the immediate laboratory area for the supply of clean dry air. It is excellent for gas chromatography instrument applications with air generators applications and is easy to use. As with all PerkinElmer products, this 110 liter per minute air compressor has been rigorously tested to meet or exceed our industry leading standards.

- Features a built-in desiccant dryer providing clean, dry, and particle free air at -40˚ F dew point
- Excellent for gas chromatography instrument applications with air generators applications
- Ultra quiet for use in the laboratory area
- Ease-of-use with built-in rolling casters and convenient handle
- Commercial / industrial grade
- 1 year warranty on workmanship

Description	Part No.
115V / 60Hz	N9306350
220V / 50Hz	N9306351
220V / 60Hz	N9306352

Ultra Quiet Compact Oil-Free Compressor

Our Ultra Quiet Compact Oil-Free Compressor has a compact size and is light in weight. Internally powder coated air tank prevents rust, extending the life of the product. The compressor is also equipped with a pressure switch for automatic operation. As with all PerkinElmer products, this 6 gallon air compressor has been rigorously tested to meet or exceed our industry leading standards.

- Compact size and light weight
- Commercial / industrial grade
- 1 year warranty on workmanship
- 5.0 micron pre-filter and regulator
- Internally powder coated air tank to prevent rust
- Pressure switch for automatic operation

Description	Part No.
115V	N9306291
220V / 60Hz	N9306292
220V / 50Hz	N9306293

Generators

We offer a comprehensive range of analytical gas supply solutions that goes beyond simply 'gas generators'. We are committed to providing analytical chemists with gas solutions that enable them to get the most out of their instruments. Whether the requirement is for ultra high purity hydrogen for use as a GC and GC/MS carrier gas or multiple gases to operate sophisticated LC/MS instrumentation, our offerings always keep the end user in mind.

Zero Air Generators

Our Zero Air Generators provide superior resolution and lowered limits of detection. Their high performance heated platinum catalyst leads to high efficiency filtration. Zero Air Generators are modular and stackable with all PerkinElmer hydrogen generators.

Features and Benefits

- High performance heated platinum catalyst
- High efficiency filtration
- Modular and stackable with all PerkinElmer hydrogen generators
- CE, UL and CSA approved
- Low life cycle cost, excellent return on investment
- Superior resolution and lowered limits of detection
- Safe and sustainable

Model	Flow Rate (mL/min)	Organic Purity (ppm)	Air Inlet @58-145 psi/g (L/m)	Delivery Pressure (psi/g)	Part No. (120 V)	Part No. (230 V)
UHP-35ZA-S	3.5	<0.1	4.2	58-145	N9303206	N9303205
UHP-50ZA-S	5.0	<0.1	6.0	58-145	N9303208	N9303207
UHP-150ZA-S	15	<0.1	18	58-145	N9303210	N9303209
UHP-300ZA-S	30	<0.1	35	58-145	N9303212	N9303211

Hydrogen Generators

Our Hydrogen Generators have a >99.999% purity, guaranteed 24/7. With a low life cycle cost, these generators have an excellent return on investment.

Features and Benefits

- Ultra safe operation
- >99.999% purity
- High purity guaranteed, 24/7
- Class leading PEM cell featuring 2-year warranty as standard
- CE, UL and CSA approved
- Low life cycle cost, excellent return on investment

Model	Flow Rate (mL/min)	Purity (%)	Water Consumption (24/7, full flow) (L/week)	Delivery Pressure (psi/g)	Part No.
20H	160	>99.999	1.25	5-100	N9303225
40H	250	>99.999	2	5-100	N9303226
60H	500	>99.999	4	5-100	N9303227

Ultra High Purity Hydrogen Generators

Our Hydrogen Generators have a >99.999% purity, guaranteed 24/7. With a low life cycle cost, these generators have an excellent return on investment.

Features and Benefits

- Ultra safe operation
- >99.9999% purity
- High purity guaranteed, 24/7
- Class leading PEM cell featuring 2-year warranty as standard
- CE, UL and CSA approved
- Low life cycle cost, excellent return on investment

Model	Flow Rate (mL/min)	Purity (%)	Water Consumption (24/7, full flow) (L/week)	Delivery Pressure (psi/g)	Part No.
20H-MD	160	>99.999	1.69	10-100	N9303201
40H-MD	250	>99.999	2.41	10-100	N9303202
60H-MD	500	>99.999	4.82	10-100	N9303203
110H-MD	1100	>99.999	10.60	10-100	N9303204

Other Gas Chromatography Accessories

We are the only chromatography supplier who develops, manufactures, supports and services every product it offers to provide a truly integrated comprehensive source. This means a world-class company with best-in-class products and superior service and support organizations can address all of your application needs to achieve your measurement goals. With 60 years of experience in gas chromatography and a long history of innovation, you can rely on us for leading-edge product selection, availability, and support.

Description	Part No.
Injector charcoal trap	N6100275
Vial diffuser	N6101276
Graphite sealing ring	N6101751
1/8″ copper tubing 50′	N9300077
1/16″ nut (pkg 5)	09903392
Wafer scribe (pkg 10)	N9301376
Silanized glass wool	03300905
Activated charcoal 1/2 lb	09905982
Advanced green septa	N6621028
Portable leak detector	N9306089
Calres O-Ring for Injector (for high temperatures)	N9302782

Oil Dilution

The Oil Prep 8 oil dilutor automatically dilutes oil samples with kerosene, in preparation for wear metals analysis by inductively coupled plasma (ICP), such as with PerkinElmer's Optima™ ICP-OES.

High Throughput - Significantly improves productivity and efficiency versus manual or single tip systems. Diluting up to 96 samples in approximately 20 minutes, one Oil Prep Workstation can prepare more than 2000 samples in 8 hours.

Flexibility - The 8-tip Varispan technology provides automatic computer-controlled variable sample probe spacing for multi-tipped processing of different original sample containers.

Reduced solvent waste - Use of disposable tips eliminates time consuming tipwash steps required with fixed-tip systems, accelerating throughput and significantly reducing the volume of waste solvent.

Minimize cross contamination - Use of disposable pipette tips also minimizes cross contamination reducing false-positive results that require significant time and expense to re-test.

Move away from manual or single-tip sample preparation methods and step up to higher throughput today with the Oil Prep Workstation

Description	Part No.
Janus Maintenance Kit	7006631
Tips 1 mL (pkg. 4800)	6001260
Janus syringe	1648185
Syringe seals and O-Rings	1648193
Tygon FEP lined (drain)	8597621
VersaTip™ HD plus (Qty. 1)	5084114
4-port valve	1648192
4 oz. Bottle	N9308900

Description	Part No.
2 oz. Bottle	N9308901
15 mL 17 mm x 1000 mm PP Vials (pkg. 1200)	N0777167
16 x 67 mm Round Bottom Vials (pkg. 1000)	L1191079
Plug for 17 mm Tube (pkg. 1200)	N077599
96 Position Sample Rack (100 mm Tall Tubes)	L1610015
32 Position Sample Rack	L1610016
96 Position Sample Rack (67 mm Tall Tubes)	L1610027

OilExpress 4

OilExpress 4 is a family of automated products for FT-IR analysis of oils to simultaneously determine key degradation and contamination properties of lubricating fluids using either the reference oil, JOAP or ASTM E2412 direct-trending or differential methodologies - or user created methods, like TAN or TBN analysis. An autosampler is used to deliver undiluted samples of used oil to the Spectrum Two FT-IR where the infrared spectrum is collected. The system can be fitted with one or two spectrometers. The spectrum is then analyzed using the selected, pre-defined algorithm to calculate and report results. For high performance FT-IR oil condition analysis without the autosampling, PerkinElmer offers the *Spectrum Two Lubricants Analysis System (L160000Q)* for single-sample FT-IR analysis, In addition the I*n-service Lubricants Application Pack (L1608009)* is available as an option for existing Spectrum Two and Frontier spectrometers.

Accessories for OilExpress 4

Description	Part No.
96 position (8x12) 17 x 100 mm Tube Rack Rack only suitable for 100mm Tall 17 mm OD tubes. Additional racks facilitate the preparation of future samples whilst a run is in progress.	L1610015
96 position (8x12) 16 x 67 mm Tube Rack Rack only suitable for 67 mm Tall 17 mm OD tubes. Additional racks facilitate the preparation of future samples whilst a run is in progress. This rack can NOT be used with the uLLS and can only be used with fixed height 17 mm tubes.	L1610027
32 position (8x4) 4 oz Bottle Rack This is a two part rack, with a top and bottom tray. The top has the screen for the bottles while the bottom is common. Includes top and bottom parts. Additional racks facilitate the preparation of future samples whilst a run is in progress.	L1610016
80x30 Inch Table, Fixed Height - OE4 & OE4 XL Accommodates the OilExpress 4 or OilExpress 4 XL Autosampler and FT-IR system, PC, monitor and keyboard	5085685

Description	Part No.
OE4 ULL Sensor - 17 mm Tubes – Field Fit This sensor is attached on the left hand side of the autosampler (valid for OilExpress 4 and OilExpress 4 XL versions) and provides ultrasonic sensing of the height of the liquid in each tube or bottle, assuring the optimal tip depth when aspirating the sample.	L1610020
OE4 ULL Sensor - 4 oz Bottles – Field Fit This sensor is attached on the left hand side of the autosampler (valid for OilExpress 4 and OilExpress 4 XL versions) and provides ultrasonic sensing of the height of the liquid in each tube or bottle, assuring the optimal tip depth when aspirating the sample.	L1610030
WinPrep Oil Dilution Software WinPrep® application software that permits oil dilution on an OilExpress 4 system. Oil samples can be diluted for ICP analysis and subsequently analyzed by FT-IR without moving the sample. Note that WinPrep Oil Dilution Application Software is included as standard with the OilExpress 4 XL.	L1610024

Consumables for OilExpress 4 Systems

Description	Part No.
17 mm Sampling Convenience Pack (Qty 4800) Comprises 4 x packs 17 mm OD 100 mm Tall tubes (N0777167) and 1 pack wide bore disposable tips (L1610023)	N9308904
Wide Bore Oil Disposable Tips (Qty 960) Comprises10 packs of 96 pre-loaded 1000 µL wide bore oil disposable tips.	L1610022
Wide Bore Oil Disposable Tips (Qty 4800) Comprises 50 packs of 96 pre-loaded 1000 µL wide bore oil disposable tips.	L1610023
17 mm OD x 100 mm Tall Tubes (Pack 1200) Polypropylene tubes suitable for 96 position rack (L1610015). Volume ca. 15 ml	N0777167
Plug/Cap for 17 mm OD Tubes (Pack 1200)	N0777599
16 mm OD x 67 mm Tall Tubes (Pack 100) Polypropylene tubes suitable for 96 position rack (L1610015) Volume ca. 10 ml	L1191079
4 oz Sample Bottle (Qty 600) Sample bottles suitable for 32 position rack (L1610016) Volume ca. 100 ml	N9308900
2 oz Sample Bottle (Qty 600) Sample bottles suitable for 32 position rack (L1610016) Volume ca. 50 ml	N9308901

Description	Part No.
Used Tip Drip Tray Disposable polypropylene drip tray to collect residual oil from used tips. Recommend spares 2 x trays for OilExpress 4 and 4 x trays for OilExpress 4 XL.	L1610028
OilExpress 4 Installation Test Oils Kit Comprises 1 x FT-IR In-Service Lubricants Control Oil (N9308350), 1 x OilExpress 4 120cS Test Oil (N9308351) & 1 x OilExpress 4 360cS Test Oil (N9308352)	N9300850
FT-IR In-Service Lubricants Control Oil Control standard for use in the determination of in-service lubricant condition properties (Soot, Water, Ethylene Glycol and Oxidation) by FT-IR following the protocol documented in ASTM E2412 Petroleum Lubricant Direct-Trending Analysis.	N9308350
OilExpress 4 120cS Test Oil - 500 ml	N9308351
OilExpress 4 360cS Test Oil - 100 ml	N9308352
60 mL Trough - Pack 25	6008103
60 mL Trough - Pack 50	6008104

Spare Parts – OilExpress 4 Autosampler

Description	Part No.
Injection Station Tubing Kit Comprises 2 x tube lengths with fittings	L1600350
OilExpress 4 Injection Station	L1610021
Hanging Tip Rack	7607537
VersaTip PLUS RoboRack Kit	7002356
5.0 ml 4-tip Maintenance Kit Each maintenance kit includes: four (4) syringes, four (4) valves, one (1) tubing replacement kit, and one (1) tube of syringe pump lubrication fluid.	7005386
80" x 30" Table, Fixed Height for OilExpress 4 and OilPrep 4 Accommodates the autosampler, FTIR, computer, monitor and keyboard	5085685

Spare Parts – OilExpress 4 FT-IR Flow Cell

Description	Part No.
OilExpress 4 ZnSe Flow cell	L1272490
OilExpress 4 ZnSe Flow cell - Refurbished	L1272490R
OilExpress 4 ZnSe Cell Windows kit Pair of ZnSe windows (front and back) suitable for OilExpress 4 flow cell	L1272496
OilExpress 4 Flow Cell Gasket Set	L1272498
OilExpress Flow Cell Maintenance Kit Comprises replacement ZnSe windows (L1272496) + cell gasket kit (L1272498)	L1272495

Spare Parts – FT-IR Instruments

Description	Part No.
Spectrum Two Source Replacement Kit	L1600243
Spectrum Two Desiccant Replacement Kit	L1600244
Spectrum Two ZnSe Window Replacement Kit	L1600242
Spectrum Two KBr Window Replacement Kit	L1600241
Frontier, Spectrum 100 disposable desiccant pack	N0171159
Frontier, Spectrum 100 Rechargeable desiccant pack	L1200219
Frontier, Spectrum 100 replacement laser head and power supply	L1200253
Frontier, Spectrum 100 replacement KBr beamsplitter	L1200214
Frontier, Spectrum 100 replacement mid-IR source lamp	L1240098

Spare parts for OilExpress (not OilExpress 4) System

Description	Part No.
Insulation block	L1200558
Sample probe OilExpress	L1200555
Solvent Bottle and cap (drilled)	L1195019
OilExpress flowcell 0.1 mm pathlength, ZnSe	L1191202
Spare ZnSe windows fpr L1191202	L1191082
Gaskets and spacers for Oilexpress flowcell L1191202	L1191082

Sample Casettes, Vials and syringes for OilExpress (not OilExpress 4) System

Description	Part No.
Pack of 1000 vials 17x67 mm	L1191079
Autosampler oil bottle rack – 30 position 4 oz bottles	L1200551
Autosampler test tube racks 16x6	L1200589
10mL syringe/plunger	L1200552
Seal kit for syringe pistons (4)	L1200553
Lunrication kit for syringe pump screw drive	L1200559
Syringe clamps	L1200574
Insulation block and cannula with tubing and fittings	L9004104
Insulation block only	L9004101
Cannula only (needle)	L9004102
Tube 6ft clear with fitting and gripper	L9004103
3 port valve	L1200608

OilExpress (not OilExpress 4) Autosampler Tubing

Description	Part No.
Waste tubing	L1200560
Tube flanging kit	9923337
Sample needle tubing	L1200587
Flowcell to syringe tubing	L1200588
Solvent to syringe tubing (2)	L1200556
Injection/transfer port to flowcell tubing	L1200557

Desiccant and Maintenance Kits

Beamsplitters

Description	Part No.
KBr Beamsplitter Replacement Beamsplitter for Spectrum One/100/Frontier FT-IR systems. Service installation required, but not included.	L1200214
CsI Beamsplitter Replacement Beamsplitter for Spectrum One/100/Frontier FT-IR systems. Service installation required, but not included.	L1200216

Desiccant Kits

These kits are required for all the PerkinElmer FT-IR Spectrometers to keep the optical path free from moisture. It is recommended that the desiccant is replaced every six months. Follow the instructions in the appropriate instrument manual to install the desiccant.

Description	Part No.
Disposable Desiccant Kit User-installable desiccant, includes two desiccant packs. Four packs (two kits) required for each desiccant change. For use with Spectrum™ 100, Spectrum One, and Spectrum One NTS systems. Six packs (three kits) required for use with Spectrum 100 and Spectrum 100N.	N0171159
Rechargeable Desiccant Kit for Spectrum One and Spectrum One NTS Includes four desiccant packs, two to use in the instrument and two spares for recharging.	L1200219

Maintenance Kits

Description	Part No.
Spectrum One NTS Maintenance Kit Includes spare Source Lamp and Desiccant recommended for 6-12 monthly maintenance operations.	L1240097
Laser Head (HeNe) and Laser Power Supply User-installable spare for Spectrum One/100 and Spectrum One NTS/100N systems.	L1200253

Source Lamps and Standards

Source Lamps

Description	Part No.
Source Lamp for Spectrum One NTS/100N User-installable spare for Spectrum One NTS/100N Systems.	L1240098
Source Lamp for **Spectrum One/100** User-installable spare for Spectrum One/100 Systems.	L120040

Standards

Description	Part No.
Spectralon Reference Standards Set (Calibrated) For use with the Spectrum One NTS/100N Reflectance Accessory and the IdentiCheck Reflectance Accessory. Includes calibrated standards for reflective values of 99, 75, 50, and 2%.	L1181322

Autosampler Supplies

Autosampler Accessories

Description	Part No.
Insulation Block for Spectrum OilExpress	L1200558
Sample Probe for Spectrum OilExpress	L1200555
Solvent Bottle and Cap (drilled) for FT-IR and FT-NIR	L1195019

Autosampler Flowcells, Windows, and Supplies

Description	Part No.
OilExpress Flowcell 0.1 mm pathlength, wedged Spacer, ZnSe Windows (one grooved), and two ports. Optimized for the sampling of viscous fluids and to reduce interference fringes.	L1191202
ZnSe Windows for FT-IR and Spectrum OilExpress Flowcell Fitted to ensure moisture resistance.	L1191081
Gaskets and Spacers for FT-IR and Spectrum OilExpress Flowcell	L1191082

Autosampler Sample Cassettes and Vials for FT-IR and FT-NIR

Description	Part No.
Plastic Autosampler Vials for FT-IR and FT-NIR Pack of 1000 vials, 17 x 67 mm	L1191079

Autosampler Sample Racks for Spectrum OilExpress

Additional sample racks can be purchased for the Spectrum OilExpress Autosampler. There is a choice of sample test tubes or sample bottle racks depending on the sampling requirements. Also, for greater productivity, one rack can be used for analysis while others are being loaded.

Description	Part No.
Autosampler Oil Bottle Rack Additional 30-position, 4 oz bottle rack to allow the preparation of the next rack while a run is in progress. Allows sample presentation in standard sample collection vessels, reducing the amount of sample preparation required.	L1200551
Autosampler Test Tube Racks 16 x 6 Allows interchangeable sampling between test-tube vials and 4 oz bottles.	L1200589

Autosampler Syringes

Description	Part No.
10 mL Syringe with Plunger for Spectrum OilExpress	L1200552
Seal Kit for Spectrum OilExpress Contains four user replaceable syringe piston noses.	L1200553
Lubrication Kit for Syringe Pump Screw Drive for Spectrum OilExpress	L1200559
Syringe Clamps for Spectrum OilExpress Clamps to prevent Syringe barrel from moving.	L1200574
Modified (insulation) block and cannula with tubing and fittings	L9004104
Modified Insulation Block Only	L9004101
Modified Cannula Only (needle)	L9004102
Tube 6ft clear tubing with fitting and gripper	L9004103
3 port valve	L1200608

Autosampler Tubing

Waste Tubing

Application	Part No.
OilExpress	L1200560

Description	Part No.
Tube Flanging Kit	09923337
Sample Needle Tubing for Spectrum OilExpress	L1200587
Flowcell to Syringe Tubing for Spectrum OilExpress	L1200588
Solvent to Syringe Tubing for Spectrum OilExpress (pkg. 2)	L1200556
Injection/Transfer Port to Flowcell Tubing for Spectrum OilExpress	L1200557

GC Biodiesel Standards

Description	Matrix	Volume	Part No.
Biodiesel blank	B100 biodiesel	100 mL	N9308286
Biodiesel blank	B100 biodiesel	500 mL	N9308287
Sulfur @ 20 µg/g	B100 biodiesel	100 mL	N9308288
Metals in biodiesel – Ca, K, Mg, Na, P @ 20 µg/g	B100 biodiesel	100 g	N9308289
100% #2 diesel fuel	#2 diesel fuel	20 mL	N9308290
2% (v/v) biodiesel	#2 diesel fuel	20 mL	N9308291
5% (v/v) biodiesel	#2 diesel fuel	20 mL	N9308292
10% (v/v) biodiesel	#2 diesel fuel	20 mL	N9308293
15% (v/v) biodiesel	#2 diesel fuel	20 mL	N9308294
20% (v/v) biodiesel	#2 diesel fuel	20 mL	N9308295
100% (v/v) biodiesel	B100 biodiesel	20 mL	N9308296

Karl Fischer® Standards

Nominal Water Concentration (%)	Matrix	Volume	Part No.
Karl Fischer® water in oil, blank	10W30 motor oil	100 mL	N9308278
Karl Fischer® water in oil, 0.1%	10W30 motor oil	100 mL	N9308279
Karl Fischer® water in oil, 0.5%	10W30 motor oil	100 mL	N9308280
Karl Fischer® water in oil, 1.0%	10W30 motor oil	100 mL	N9308281

Viscosity Reference Standards

Description	Matrix	Size	Part No.
Viscosity Standard 30	Hydrocarbon oil 1	Gallon	N5316025
Viscosity Standard 110	Hydrocarbon oil 1	Gallon	N5316024
Viscosity Standard 130	Hydrocarbon oil 1	Gallon	N5316026

FT-IR Control Oil Standard

Description	Part No.
In service lubricants FT-IR Control standard The In-Service Lubricants FT-IR Control Oil has been specially formulated to mimic the spectral signature of an in-service diesel motor oil, and contains known amounts of water, soot, oxidation (carbonyl-bearing compounds) and ethylene glycol. Comes with Certificate of Analysis.	N9308350

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Teaching you to accomplish more with our products is our continuous goal. Our highly qualified trainers use the same technologies you do in your laboratories. This helps us create courses that are relevant, interactive and rich in content. For any course we create, our goal is for you to start applying what you've learned the next day on the job. In addition, you'll benefit from networking with other students, hands-on laboratory experience with the latest equipment and an unsurpassed faculty, each with over 20 years experience.

Instrument Applications in Oil Analysis **Part No. N0209708**

This multi-day course features both lectures and lab demonstrations where you will gain the knowledge and skills needed for analyzing, optimizing and troubleshooting new and used oils with ICP-OES, FT-IR and GC. A basic understanding of ICP-OES, FT-IR and GC instruments and software is required.

Every day, you can count on PerkinElmer to provide you with solutions that deliver reliable performance, control operating costs and maximize operational time. Our complete portfolio of consumables, parts, supplies, training and service helps you meet both routine and demanding measurement challenges. We invest heavily in testing and validating our products to ensure you receive guaranteed compatibility and performance – on-time, for every instrument in your laboratory.

For a complete listing of consumables and supplies, please visit www.perkinelmer.com/lubricants

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